



Alion 200 SC: A Promising New Herbicide for Weed Management in Florida Citrus

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Alion 200 SC® (indaziflam) is a promising new herbicide under development by Bayer CropScience for proposed use in perennial tree crops, including citrus. The new herbicide is for the preemergence control of broadleaf weeds and annual grasses. Alion 200 SC belongs to the alkyazine chemical class of herbicides. Indaziflam inhibits cell wall biosynthesis and acts on meristematic cell growth affecting germinating weeds prior to emergence. The herbicide can be used alone or in tank-mix combinations with various pre- and/or postemergence products. In 2009, two field trials were initiated in a young citrus grove in St. Lucie and DeSoto counties. Alion 200 SC was applied at 5.13 to 6.84 oz/acre in tank-mix combinations with glyphosate and compared with existing registered residual herbicide tank-mixes. In St. Lucie County, Alion 200 SC, when applied with glyphosate, provided greater than 83% overall weed control at 4 months after application at both 5 and 6.5 oz/acre. In DeSoto County, Alion 200 SC provided 90% control of all weeds at 88 d after treatment (DAT) when applied at 6.84 oz/acre.

Alion 200 SC ® (indaziflam) is a promising new herbicide under development by Bayer CropScience for proposed use in perennial agricultural crops such as fruit (including citrus), vines, nuts, and olives. The new herbicide is for the preemergence control of broadleaf weeds and annual grasses, including goosegrass and crowfoot grass. Alion 200 SC belongs to the alkyazine chemical class of herbicides. It inhibits cell wall biosynthesis and acts on meristematic cell growth affecting germinating weeds prior to emergence. The herbicide can be used alone or in tank-mix combinations with various pre- and/or postemergence products.

The objective of these studies was to evaluate weed control provided by Alion at two sites where young citrus trees are being grown.

Materials and Methods

To evaluate Alion 200 SC, two trials were conducted in 2009 in young citrus groves located in St. Lucie and DeSoto counties. Alion 200 SC and other preemergent materials were compared in tank mixes with glyphosate. The St. Lucie grove consisted of 2-year-old red grapefruit trees planted on double row beds. The DeSoto location contained 1-year-old 'Valencia' trees planted on single row beds. In both locations the trees were grown on Swingle citrumelo rootstock. The row spacing at both locations was the same at 12.5 × 25 ft. Both trials were conducted as a randomized complete-block design with three replications and four trees per plot.

Observations on weed control were made at approximately 30-d intervals and visually rated as to the percent weed control in each plot for each rating period. The rating scale used was 0 to 100, with 0 being the test plot is completely covered with weeds and 100 being complete weed control (no weeds present in the plot).

At the St. Lucie location, all tested materials were applied with a tractor-mounted herbicide boom system using a centrifugal pump system and the adjuvant Choice was included in all treatments at 0.25% v/v. Application volume was 25 gpa applied at 30 PSI. Four Teejet TT11002 tips were used in a boom with an offset OC-04 nozzle at the end of the boom providing 6-ft coverage. Tractor speed was 3.2 mph. Each individual sprayed plot was 12 ft × 50 ft.

At the DeSoto location, plots were 12 ft × 36 ft. Treatments were applied with a hand-held boom using CO₂ spraying system applying 30 gpa at 40 psi. The boom consisted of four Teejet TEE-JET110 nozzles spaced at 1-ft intervals providing 6 ft of coverage.

Results

At the St. Lucie location, inclusion of Alion 200 SC in the tank mix provided better weed control at 5 and 6.5 oz/acre as compared to Alion at 3.5 oz/acre at 120 d after treatment (DAT) (Table 1). Numerical weed control ratings at 120 DAT were higher for Alion 200 SC at the 5 and 6.5 oz/acre rate as compared to grower standard treatments Krovar, Solicam + Karmex and Prowl + Karmex for inclusion with glyphosate. However, while numerically higher, they were not significantly different at 120 DAT. All treatments provide superior long-term control as compared to glyphosate alone, indicating the enhanced length of control provided by the residual herbicide material.

At the DeSoto location, the Alion 200 SC addition provided

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Table 1. Weed ratings as visually rated at the St. Lucie County location.

| Trt. no. | Material applied | Rate | 30 DAT ^z | 60 DAT | 90 DAT | 120 DAT |
|----------|--|---|---------------------|--------|--------|---------|
| 1 | Roundup Weather Max Choice | 44 oz/acre 0.25% v/v | 98 a | 75 b | 35 b | 23 b |
| 2 | Roundup Weather Max Alion Choice | 44 oz/acre 3.5 oz/acre 0.25% v/v | 99 a | 98 a | 88 a | 64 ab |
| 3 | Roundup Weather Max Alion Choice | 44 oz/acre 5 oz/acre 0.25% v/v | 99 a | 98a | 95 a | 89 a |
| 4 | Roundup Weather Max Karmex 80DF Choice | 44 oz/acre 2 lb/acre 0.25% v/v | 98 a | 97 a | 90 a | 83 a |
| 5 | Roundup Weather Max Alion Choice | 44 oz/acre 6.5 oz/acre 0.25% v/v | 99 a | 98 a | 90 a | 83 a |
| 6 | Roundup Weather Max Krovar I Choice | 44 oz/acre 3 lb/acre 0.25% v/v | 99 a | 98 a | 96 a | 63 ab |
| 7 | Roundup Weather Max Solicam Karmex Choice | 44 oz/acre 3 lb/acre 2 lb/acre 0.25% v/v | 99 a | 98 a | 92 a | 70 ab |
| 8 | Roundup Weather Max Prowl H ₂ O Choice Karmex 80DF | 44 oz/acre 7 pt/acre 2 lb/acre 0.25% v/v | 99 a | 97 a | 85 a | 59 ab |

^zWithin a column, means followed by the same letter do not significantly differ ($P = 0.05$, Student-Newman-Keuls); DAT = days after treatment.

Table 2. Weed control ratings as visually rated at the DeSoto County grove location.

| Trt. no. | Material applied | Rate | 25 DAT ^z | 54DAT | 88 DAT |
|----------|---|--------------------------------------|---------------------|-------|--------|
| 1 | Untreated | | 7 b | 3 b | 0 b |
| 2 | Roundup Weather Max Alion | 43 oz/acre 5.13 oz/acr | 99 a | 95 a | 71 a |
| 3 | Roundup Weather Max Alion | 43 oz/acre 6.84 oz/acre | 99 a | 97 a | 90 a |
| 4 | Roundup Weather Max Solicam Diuron | 43 oz/acre 3 lb/acre 4 lb/acre | 99 a | 98 a | 75 a |
| 5 | Roundup Weather Max Prowl H ₂ O Diuron | 43 oz/acre 8 pt/acre 4 lb/acre | 98 a | 98 a | 92 a |

^zWithin a column, means followed by the same letter do not significantly differ ($P = 0.05$, Student-Newman-Keuls); DAT = days after treatment.

71% and 90% weed control at 88 DAT at 5.13 and 6.84 oz/acre, respectively (Table 2). These results were very similar to grower standards of Solicam + diuron and Prowl H₂O + diuron. At this location, the untreated control was completely covered with weeds and had a 0% weed control rating at 90 DAT. However, at 88 DAT no significant differences were noted among the treatments that

contained residual herbicide compounds.

The weed spectrum varied between locations, resulting in different overall weed control provided by the various herbicide treatments. As with any herbicide program, herbicide selection and rates may vary depending on location, weed species present, season, and label restrictions.